



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/760,424	01/21/2004	Jianglei Ma	71493-1234 /aba	1236
------------	------------	-------------	-----------------	------

7380	7590	08/23/2007
------	------	------------

SMART & BIGGAR  
P.O. BOX 2999, STATION D  
900-55 METCALFE STREET  
OTTAWA, ON K1P5Y6  
CANADA

EXAMINER

HUYNH, NAM TRUNG

ART UNIT

PAPER NUMBER

2617

MAIL DATE

DELIVERY MODE

08/23/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/760,424	MA ET AL.	
	Examiner	Art Unit	
	Nam Huynh	2617	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-13 and 31-47 is/are rejected.
- 7) ☒ Claim(s) 14-30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-6, 8-13, and 31-47 are rejected under 35 U.S.C. 102(a) as being anticipated by Walton et al. (US 2003/0081538) (hereinafter Walton).

Regarding claims 1, 4, 6, 34, 36, and 40-43, Walton discloses a multiple-access hybrid OFDM-CDMA system (title). In the scope of the invention a base station includes a modulator that may be used for the downlink with a terminal that modulates a cover code that is unique to a cell, sector, or base station (access channel information) (page 4, paragraph 53, 54) with an OFDM symbol for the data symbol (at least one set of time-continuous signal components of a communication signal, each set of time-continuous signal components having a respective common frequency, the communication signal comprising a plurality of signal components (page 3, paragraph 40) (Applicant's specification (page 13, lines 7-17). This signal is transmitted in a pilot (transmitting the communication signal) (page 4, paragraph 55).

Regarding claims 2, 3, 10, and 37-39, Walton teaches that the modulated signal also includes a spreading code (common/primary synchronization code) or PN sequence (page 3, paragraphs 39, 40). The cover code renders the

secondary synchronization code and is mapped to the pilot (page 4, paragraph 54, 55).

Regarding claims 5, 8, and 9, Walton teaches that the OFDM symbols from IFFT are appended to a cyclic prefix to each OFDM symbol to for a corresponding transmission symbol (sub-carrier) (page 3, paragraph 44). Therefore the transmission symbol contains a plurality of OFDM symbols (first and second time-continuous signal components).

Regarding claims 11, 44, and 32, Walton illustrates a plurality of antennas in figure 2, item 224a...224t).

Regarding claims 12, 13, 31, 33, and 45, Walton discloses that each terminal in the system may be equipped with one or multiple receive antennas (receiving a communication signal having a plurality of time-continuous signal components) (page 4, paragraph 56). The terminal includes a demodulator that uncovers (searching for access channel information) the received data samples with the cover code associated with the cell/sector being demodulated (synchronization parameters) (page 5, paragraph 60).

Regarding claim 35, the limitations are rejected as applied to claim 12. Walton further teaches that a time control loop provides the necessary OFDM symbol timing for the processing at the receiver unit (performing fine timing and frequency synchronization at the terminal) (page 5, paragraph 62, 63).

Regarding claim 46, it is inherent and well known in the art that the terminal comprises a memory. Evidence that the terminal has memory can be seen since the terminal retrieves "M+L" stored samples (page 6, paragraph 71).

Regarding claim 47, the limitations are rejected as applied to claims 1 and 12.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walton et al. (US 2003/0081538) (hereinafter Walton) in view of Krishnan et al. (US 7,039,001) (hereinafter Krishnan).

Walton discloses the limitations set forth in claim 1, but does not explicitly disclose or teach that the time-continuous signals are associated with frequency indexes and separated by a power of 2 when modulated onto access channel information. Krishnan discloses channel estimation for OFDM communication system (title). In the scope of the invention subband in each group (frequency indexes) are uniformly grouped and spaced (separated) by a power of 2.

Art Unit: 2617

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Walton to include separating the OFDM symbols and respective frequency indexes by a power of 2 in modulation, in order to more efficiently ensure channel response in an OFDM system.

***Allowable Subject Matter***

6. Claims 14-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Usui et al. (US 6,515,960)

Ryan (US 6,643,281)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nam Huynh whose telephone number is 571-272-5970. The examiner can normally be reached on 8 a.m.-5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on 571-272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2617

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NTH  
8/14/07

  
GEORGE ENG  
SUPERVISORY PATENT EXAMINER